

**DIESEL SIP WORKGROUP
SUMMARY OF CONTROL MEASURES DISCUSSED 8-17-2005
NONROAD PORT AND RAIL**

Criteria for evaluating each measure:
 Environmental Benefits
 Technical Feasibility
 Economic Feasibility
 Implementation Feasibility
 Societal Benefits/Env Justice
 Enforceability

DESCRIPTION OF STRATEGY	PROS	CONS
Voluntary speed reduction (ships)	Voluntary, little if any cost.	Difficult to enforce. Speed already limited in NJ Ports due to high amount of ship traffic and the ships having to negotiate through the Arthur Kill and Kill Van Kull. California requires speed reduction in ocean channels, not harbor.
Cold ironing (long term solution)	Significant reduction in emissions, including local Appropriate for dedicated vessels	High cost due to changes on both ships and docks, no IMO standard for electrification/power
Alternative fuel use (low or ULSD)	Port already using low sulfur for yard handling equipment, ship fuel comes from local refinery. International agreements are being worked out to reduce the sulfur in the ship fuel (MARPOL Annex 6.	Not all ships fuel in port, could use incentives to spur adoption. Ships typically use the highest sulfur, least expensive fuel available (bunker fuel). Can they use ULSD without technical modifications/problems?
Hybrid engines (diesel electric)	May be efficient and cost-effective to use battery power for tugs, lower fuel cost	High purchase price, potential horsepower penalty. High cost for battery replacement
Engine retrofits for ferries (DOCs, DPFs)	SCR: Nox strategy, but done in LA for nonroad	Not verified, not good for SIP. SCR not effective unless engine reaches a high enough temperature. SCR equipment takes up a lot of storage space
Scrap old yard equipment and replace with newer models equipped with on-road engines	Cost-effective, can be voluntary, dramatic reduction in emissions.	Cost differential between old and new engine. A voluntary program would need to provide sufficient financial incentive to offset cost of newer, more expensive engine.
Emission Fees, Permit Fees.	Generate funding source for purchase of retrofit or replacement engines. Provide incentive to reduce PM emissions.	Cost and ability of enforcement. Not accepted by regulated community.
Timeshifting (changes in port hours).	Reduces congestion/idling, high rate of adoption in LA due to surcharge during peak hours.	May be Teamster's concerns. Warehouses would have to adjust hours to accept off-peak deliveries. Additional costs to staff ports and warehouses. Time shift may conflict with local ordinances for noise and traffic.

Electronic gate	Improves port efficiency overall, improves security. Reduces idling time.	Capital costs high, limited land available
Crane electrification	Already underway, cost-effective for business as well as emission reduction	High cost of infrastructure and cost differential for electric crane and supporting infrastructure.
Shared chassis pools/centralized locations	Done in Va, Hampton Roads Reduced turnaround times, improved safety, reduced idling	Requires cooperation among different businesses. Different carriers provide different chassis.
Repower Tugs.	Port Authority already doing this as an offset for emissions during the harbor dredging project.	High capital cost.
Trains: cleaner fuel (ULSD required beginning 2012)	PM benefit, use enables retrofits Localized, urban benefits	Limited legal authority, need incentives or funding otherwise cost will shift to riders.
Idling reduction through use of gensets or fuel fired heaters for trains.	Commercially available. Fuel savings and engine wear savings.	Need behavioral changes (many new engines can be shut off in cold weather but drivers don't realize). Idling maintains air brake pressure - can genset do this? Switch locos need to go at a moment's notice so not conducive to APUs or Kim Hotstart device.
Idling reduction for ferries through use of "strong arm docker"	Would allow ferry vessel to dock with engines at idle instead of under power.	High initial capital cost.
Incentives for green goat or similar hybrid locomotives	Voluntary, large PM reductions, good power, proven technology.	Single supplier with production issues. Currently, technology is restricted to "Switcher or Yard Engines"; cannot be used in long haul applications.
Short haul barging of materials to satellite rail location. (Port of NY/NJ currently barging containers up Hudson to Albany on a trial basis)	Electric rail has reduced PM; goods exit port more quickly. Reduction in traffic due to containers being transported by barge instead of truck.	Long term solution, very expensive, need partners
Continued electrification of passenger rail lines	Within control of NJ Transit/state. Will it provide improved service? PM reduction.	High cost. Only installed now where ridership is high enough to be cost-effective
Periodic inspections of locomotives (similar to onroad inspections)	Increase in fuel efficiency due to optimal engine operation. May generate monies to fund a PM reductions program specific to railroads.	High cost to implement an inspection program. May conflict with federal regulations that cover railroads.
Require that all locomotives parked for more than minimum hours in NJ be plugged in (electric or APU)	Could be significant reduction, enforceable	Possible lack of authority

Congestion management for freight rail: upgrading track to raise speed limits, grade separating road and rail, etc.	Significant reduction in locomotive idling	Expensive?
Electrify airport ground equipment/rechargeable batteries	An electrification program has been or is being performed at the Dallas/Ft. Worth Airport.	Portability limitations. Cost.
Alternative fuels/propane natural gas retrofits, ULSD	PM reduction, fuel savings	Cost to retrofit. Technology may not be proven in this application.
Idling restrictions	PM reduction, fuel savings, reduction in engine wear. Low cost.	Difficult to enforce. May not be practical in harsh weather conditions. There may be operational concerns where some equipment may have to constantly run.
Cap and trade on airport emissions. "bubble concept"	Would potentially reduce concentrated emissions in high PM/non-attainment areas.	Reductions in PM emissions may be minor to non-existent on a large scale. Emissions are just being moved from one area to another.
Charge fees to airplanes based on their emissions (i.e., differential landing fees)	Financial incentive to upgrade the current aircraft fleet to newer, fuel efficient, less PM emission aircraft.	Expense of enforcement. May conflict with current FAA rules.
Make efficiency improvements/upgrading a part of the airline or airport lease agreement.	Fuel saving/PM savings. Long term cost savings.	Possible legal ramifications associated with these lease conditions. Maybe objectionable to airlines due to increased costs.